

REALITY'S CHOICES

Systems Designed for Use with Computers

1. **eVolution C-Series**
Digital Doc
- 2a. **AcuCam Concept IV^{FWT}**
Gendex
- 2b. **ImageCam USB 2.0**
Dentrix

Stand-Alone Systems

1. **AcuCam Concept IV**
Gendex
2. **Aurora 2**
Digital Doc
3. **eVolution M-Series**
Digital Doc
4. **MicroPlus**
Progeny



Systems Designed for Use with Computers

Camera	Cost	Camera Casing	Camera Weight	Light Source	Can light be turned off to capture x-ray on viewbox?	Image Capture Mechanism	Focus Settings	Focus Mechanism
eVolution C-Series Digital Doc	\$4,995.00	Plastic/ steel	10.5oz/ 297.7g	9 LED	No	Button on top of camera	3	Intrusion/ extrusion of lens chamber
AcuCam Concept IV^{FWT} Gendex	\$5,290.00	Steel	12.3oz/ 348.7g	75 Watt Halogen bulb	Yes	Foot pedal	4	Ring
ImageCam USB 2.0 Dentrix	\$5,550.00	Steel	11.5oz/ 326.0g	75 Watt bulb	Yes	Foot pedal or mouse	2	Ring

Stand-alone Systems

Camera	Cost	Camera Casing	Camera Weight	Light Source	Can light be turned off to capture x-ray on viewbox?	Image Capture Mechanism	Focus Settings	Focus Mechanism	Maximum number of stored images
AcuCam Concept IV Gendex	\$5,775.00	Steel	12.3oz/ 348.7g	75 Watt Halogen bulb	Yes	Foot pedal	4	Ring	4
Aurora 2 Digital Doc	\$7,320.00	Plastic/ steel	10.5oz/ 297.7g	9 LED	Yes	Button on top of camera	3	Intrusion/ extrusion of lens chamber	12
eVolution M-Series Digital Doc	\$5,595.00	Plastic/ steel	10.5oz/ 297.7g	9 LED	Yes	Button on top of camera	3	Intrusion/ extrusion of lens chamber	12
MicroPlus Progeny	\$5,665.00	Plastic	10.0oz/ 283.5g	6 Watt Halogen bulb	No	Button on left side of camera	No specific settings	Sliding switch on top of camera	4

An intraoral camera allows patients to see their mouths as we see them, up close and in living color. We can show patients carious lesions, fracture lines, leaking margins on old restorations, calculus, plaque, and exposed dentin when the enamel has been worn away due to bruxing. It is a marvelous educational tool that is easily learned and incorporated into the dental office environment by the entire staff.

Giving patients the ability to see their own mouths really brings the concept of co-diagnosis alive. Ownership of any problem is now transferred to the patient, where it belongs in the first place. When a patient can see his/her own mouth, aggressive salesmanship is less necessary (and probably less desirable in any situation). This means that you won't have to spend so much time listening to the practice management "gurus" who keep trying to teaching us those trite phrases which should be used to "close the sale."

Often, we will see a molar that has been previously restored with amalgam and now has fractures all through the enamel. Radiographically, this restoration might look quite small, but you know there will be a battle with the insurance carrier over whether the cusps should be covered or not. All of these systems can accommodate a printer that produces a hard copy of the tooth captured by the camera so it can be sent to the insurance company in lieu of, or in addition to, a radiograph. With a computerized system, this process becomes even easier. The insurance form, digital x-ray, and intraoral camera image can all be sent via electronic filing.

The uses of an intraoral camera are virtually limitless, ranging from the hygiene room for recall exams, during the initial examinations and consultations, and even during restorative procedures. For example, a patient complains about a tooth that is sensitive to mastication. The tooth appears to have a fracture line running mesiodistally, but the extent of the fracture is unknown. You open the fracture line with a small diamond or an air abrasion unit and use a caries detecting dye to stain it.

Once the extent of the fracture is evident and visible, you can capture an image to show the patient what you are seeing. The patient can then make an informed decision on the treatment options. In this scenario, the patient can feel good about the decision-making process since he or she actually saw the problem with his or her own eyes. You win since you do not have to convince the patient that there is potentially a serious problem.

This example illustrates that it is important to have this equipment just as available as a handpiece. While stand-alone systems may still have merit for small offices, multi-operator, network setups are definitely the way to go if you want high utilization.

System Components

Camera

Base Unit/Docking Station Usually sits in a nook in the cart, mounted on the wall, or placed on a cabinet in the treatment room. At least one system has a wireless docking station that does not even require mounting and another has a USB connection directly into the computer, eliminating this component entirely.

Wand/Handpiece Actual instrument that goes in the mouth and records the images. Some wands have a set focal length while others have a focusing mechanism to vary the focal length. It may also

have the capture button for each image. All should provide custom barriers for asepsis.

Footpedal

Most systems no longer include foot controls, at least as standard equipment, for operation, although there are still some holdouts. A footpedal is just one more item to move if you have a stand-alone system that is transferred from room to room. And it clutters the floor. This is especially treacherous in the hygiene room where the floor is already crowded with irrigators, ultrasonics, and handpiece foot controls.

Light Source

All the systems have automatically adjusted light sources to illuminate the field. The illumination of the subject is very important for clear visualization.

Monitor

Usually, the bigger the better. But this depends on how far the patient will be sitting from the monitor.

Printer

Printers are commodity items, with 5760 x 1440 optimized dpi models selling for under \$100. Therefore, it is easy to buy a high resolution printer today. Once you purchase the printer, you should try several settings to see which gives you the best images for intraoral shots as well as x-ray prints, since you will probably be using the printer for both, assuming you have switched to a digital x-ray system. Using the glossy paper will also help to improve the quality of the printed image.

VCR

Using a video recorder to record an intraoral tour of the mouth used to be a common procedure, but most offices have discontinued its use, especially if you are using a computerized system. However, it is still an option if this format appeals to you. One of the reasons moving video was used in the past was that still images take away the ability to show a patient what happens when you gently probe a pocket and it begins to bleed profusely. Or, when you are examining a carious pit, showing the patient how the explorer actually "sticks" in the soft decay.

Computer

Buy the fastest model and as much memory as you can afford. With the computerized systems, you don't need any type of recorder, since you save the images on the hard drive of the computer for recall whenever you need them. You can also do a video tour of the mouth through the computer.

Cart

If you plan to move the system from room to room, you will need a cart. The best ones are customized to your system and hide all the cords. The only exception will be that if your office is networked or if you have a docking station in each room, you would only have to move the camera.

Video Exam

Recline the patient in the dental chair, as you would for a conventional exam. Place the barrier-protected camera in the patient's mouth and start the exam in your usual intraoral location. Depending on what type of system you have, you can capture views of the four worst teeth (splitting the monitor screen into more images makes them too small for any impact), every tooth, or save the entire exam on your hard drive. It is much easier to capture the images you wish to show the patient, rather than attempting to let the patient watch live during the actual exam. That approach does not allow you to point out areas of concern on the screen and doesn't let the patient ask questions.

When you finish the exam, sit the patient up and show him/her the images. From a communication standpoint, it is advantageous to sit by the patient's side and use the mouse to scroll through the captured images. You can use a small laser pointer, an arrow, or draw with color (some software allows you to do it) to pinpoint the areas of concern, thus keeping the "co-discovery" on a personal level and less of a "teacher lecturing the student" approach.

POTENTIAL ADVANTAGES

- + Improved communication with patients
- + Increased acceptance of necessary treatment
- + More comprehensive dentistry — restoring more quadrants than single teeth
- + Patients readily accept ownership of the problem
- + Appears state-of-the-art
- + Potential for increased referrals
- + Ability to generate hard copies for patients to show to family
- + Easier insurance acceptance of treatment
- + Saves time — patients can see problems with their own eyes
- + Minimizes patients' fears that you are proposing unnecessary treatment

POTENTIAL DISADVANTAGES

- Cost
- Space requirements (networked systems require minimal additional space)
- Training time (minimal)

Systems Designed for Use with Computers



(4.3)

eVolution C-Series
Digital Doc

1

NEW

Cost: \$4,995.00**Includes:**

- Camera module
- C-Series backpack
- S-Video and Composite cables
- 12v power supply
- 25 sheaths

Cost: \$143.00 (\$0.29 ea)

- Camera sheaths (500)

Additional and/or optional equipment/services**\$400.00** Extended warranty/year**\$995.00** C-Series backpack**Warranty:** 2 years**Is delivery included?** Yes.**Is installation included?** Yes.**Is training included?** Yes, by dealer or sales representative.**What if it needs repair?** Call customer service. There is a 72 hour turn around on all repairs.**Is there a loaner program?** No.

RAVES & RANTS

- + Best illumination
- + Compatible with any management software
- Sheaths must be pressed against lens
- Activating capture button without moving camera is tricky

Utilizes a SuperHAD 1/4" Sony high resolution CCD with auto white balance and continuous variable speed shutter. Has a 105° field of view with 50x macro lens.

Camera Cord

Measures 6.0ft/1.8m. Beige color, very flexible. It is attached to the backpack by beige cartridge module.

Docking Station

Called a backpack measuring 11.0in/27.9cm in width, 6.0in/15.2cm in height, 2.0in/5.1cm in thickness. It is designed to be mounted on the back of an LCD monitor, but there is no adapter for a CRT. To remove the camera from the backpack is a matter of just sliding it out. There is no switch for turning off the light so you can capture an x-ray on a viewbox.

Light Source

Array of nine LEDs emitting high output TrueSpectrum light arranged around three sides of the lens.

Footpedal

None.

Software

None. You connect via a capture cable to any software of your choosing.

Directions

Simple cardboard foldout. Straightforward, easy to understand. ➤

Camera

Steel casing except at front end, which is beige plastic. Weighs about 10.5oz/297.7g with the cord. Length is 9.9in/25.1cm. Diameter is 0.9in/2.2cm where you hold it, 0.7in/1.7cm at the front end. Focal length is adjusted by the position of the lens chamber, which is the constricted area near the front end. By pulling the lens chamber out as far as it will go, you will be in the close-up setting. You will see a red reference line near the base of the lens chamber. The middle position, where the red reference line is barely visible, gives you the two surfaces position. By pushing the lens chamber into the camera's back end as far as it will go, you will get to the full smile/full face position. When taking smile images, a sheath is not recommended. While these adjustments are not difficult, you probably will not be changing the settings during an exam.

There is also a small image capture plastic button on the top of the camera, where you have access to it regardless of whether you are right-handed or left-handed. This button is easy to activate and doesn't cause distortions in your image. You depress the button to capture and hold the button down to save. To recapture the image, press the button once more to erase and to go live again.

2a

AcuCam Concept IV^{FWT}Gendex
www.gendex.com★★★★★
(4.1)

NEW

**Camera**

Steel casing. Weighs about 12.3oz/348.7g with the cord. Length is 7.5in/19.1cm. Diameter varies from 0.4in/1.0cm at the active end to 0.9in/2.3cm where you will hold it at the back end. Focal length is adjusted by rotating the adjustment ring at the back end of the camera. While this is not a difficult maneuver, you probably will not be changing the settings during an exam. There are four settings: (1) E mode is for extraoral use and depth of focus is about 40mm (smile) to infinity (full face), (2) W mode is for wide-angle intraoral viewing from two teeth to a quadrant, (3) C mode is a close-up mode for viewing of one or two teeth, and (4) M mode provides Macro focusing with an increased magnification to as close as 1mm, which allows you to see the minor cracks on teeth.

Utilizes a SuperHAD 1/4" Sony Grade 6 CCD. The video processor technology provides automatic light intensity control, which eliminates glare and reflections from amalgams and produces true intraoral colors. The direction of view is 62°, which is from 15° to 5.5° backward viewing. This improves overall access, which enables easier viewing of the distal surfaces of second and third molars. Unlike most intraoral cameras that use simple prisms to obtain a 90°-80° direction of view, which inverts the image, it uses a non-inverting roof prism.

Camera Cord

Measures 6.0ft/1.8m. White color, not very flexible. It is attached to the docking station by a metal cylinder that inserts into a simple recess. To remove the camera from the docking station, you merely pull out the connector, a movement that can be done with one hand. To reconnect the camera to the docking station, you need to line up the red dot indicators before you completely insert it. You will hear a slight click indicating that the camera is properly connected. Damage could occur to the camera and/or docking station if this maneuver is not done properly.

Cost: \$5,290.00**Includes:**

- Camera
- Docking Station
- Footswitch
- 50 sheaths
- Software Drivers 1.2b CD

Cost: \$120.00 (\$0.24 ea)

- Camera sheaths (500)

Additional and/or optional equipment/services**\$1,500.00** Docking Station w/ footswitch**\$630.00** 1-year extended warranty**Warranty:** 1 year.**Is delivery included?** Varies by dealer.**Is installation included?** Varies by dealer and type of installation needed.**Is training included?** Yes, by the local Gendex representative.**What if it needs repair?** Contact dealer or Gendex. System will be replaced if in warranty, usually on the next business day.**Is there a loaner program?** No, since replacement of defective unit negates the need for a loaner while the unit is under warranty.**RAVES & RANTS**

- + Four preset settings
- + FireWire connectivity is very fast
- Full face is distorted
- Switching focus during use is cumbersome

Docking Station

White plastic measuring 8.0in/20.3cm in width, 7.0in/17.8cm in depth, and 2.5in/6.4cm in height. The control panel has only one button that turns the light on and off. There are also two small LEDs that glow green and amber. These lights indicate various modes: (1) blinking green means the power is on and in stand-by mode, (2) solid green means that the camera is active, (3) solid amber means that another video source is selected, (4) blinking amber means that it is in diagnostic mode, (5) both blinking happens only when the camera is plugged in, and (6) both solid means something is wrong with the camera.

The right side has the camera bracket called the holster, which can also be mounted where your handpieces are located. When the camera is removed from the holster, the light is automatically activated.

Light Source

Uses a 75 watt halogen bulb. Transmitted through two bars on the left and right of the lens.

Footpedal

Wired. Has two sections: C and M. C is for capture and M is for memory. Click on C one time to freeze frame and click it once again to retake. If you are satisfied with the image, click M once to save the image.

Software

Vixwin Pro.

Directions

175 pages in five languages. Covers how to operate, installation, computer requirements, how to connect the system, how to place the protective sheaths, how to replace the light bulb, cleaning and sterilization. Well written and very detailed, relatively easy to understand and follow with pictures and graphics. ➤



(4.1)

ImageCam USB 2.0

Dentrix

www.dentrix.com

2b

NEW

Cost: \$5,550.00

Includes:

- Camera
- Docking Station
- 25 sheaths

Cost: \$125.00 (\$0.25 ea)

- Camera sheaths (500)

Additional and/or optional equipment/services

\$1,450.00 USB 2.0 Docking Station

\$300.00 Wireless Digital Footswitch

\$630.00 1-year extended warranty

\$995.00 Onsite training/8-hour day

Warranty: 1 year

Is delivery included? No.

Is installation included? No.

Is training included? No.

What if it needs repair? Dentrix will issue a call tag for pick-up. Will be replaced at no charge within 30 days. After that, it will be repaired at no charge for the first year.

Is there a loaner program? Yes, at no cost as long as the unit is under warranty.

**Camera**

Steel casing. Weighs about 11.5oz/326.0g with the cord. Length is 6.9in/17.5cm. Diameter is 0.5in/1.3cm. Focal length is adjusted by rotating the knurled adjustment ring at the back end of the camera. While this is not a difficult maneuver, you probably will not be changing the settings during an exam. There are two settings: (1) "M" is for a macro view close-up on half of a tooth or less and (2) "I" setting is an infinite view, which allows you to switch from Arch, Smile, Quadrant, or single tooth view without any adjustments and keeps all images in focus. It does not have full face (extraoral) capability.

Utilizes a SuperHAD 1/4" Sony Grade 6 CCD, which seems to produce better colors than the 1/2" HyperHAD CCD (although some of this is probably from the improved optical system). Has a 62° field of view with optical field flatteners. Also has Digital Signal Processing to produce a high quality image, which eliminates glare and reflections from amalgams and produces true intraoral colors.

RAVES & RANTS

- + Wireless footswitch
- + Has grayscale setting for x-rays
- Must have Image 4.0 to run
- Must have Dentrix 10.5 to run Image 4.0

Camera Cord

Measures 5.8ft/1.8m. White color, not very flexible. It is attached to the docking station by a silver box that is the size of a box of kitchen matches. It is (LxWxH) 4 1/2" x 2 1/2" x 1 1/2". This silver base is what needs to be removed from the docking station to move the camera from room to room. There is only one way to insert this box into the docking station making removing and inserting very easy.

Docking Station

White plastic measuring 10.75in/27.3cm in width, 10.0in/25.4cm in depth, and 3.25in/8.3cm in height. The control panel has four red control buttons: (1) On/Standby manually turns the power on and off, (2) Color Preset 1/Color Preset 2 changes the color temperature of the light, (3) Normal/Super Sharp increases or decreases image clarity, and (4) Light On/Light Off/X-Ray turns the light on and off, or switches to gray scale for viewing X-rays on a light box.

Light Source

Uses a 75 watt halogen bulb. Transmitted through two bars on the left and right of the lens.

Footpedal

Wireless. Has two sections: Capture and Retake. Depress and release Capture lever to freeze, then depress and hold Capture to save, and depress and release Retake to erase and go back live. Fairly easy to use.

Software

Dentrix Image 4.0 Intraoral and Dentrix Version 10.5.

Directions

None. However, there is a section in the Dentrix Image 4.0 user's guide on the camera and using it with the software. ➤

Stand-Alone Systems

1

AcuCam Concept IV

Gendex
www.gendex.com

★★★★★
(4.3)

ENCORE



Cost: \$5,775.00

Includes:

- Camera system
- Docking Station
- Footswitch
- Disposable Sheaths (50)
- RCA to BNC adapter and cable

Cost: \$120.00 (\$0.24 ea)

- Camera sheaths (500)

Warranty: 1 year

Is delivery included? Varies by dealer.

Is installation included? Varies by dealer and type of installation needed.

Is training included? Yes, by the local Gendex representative.

What if it needs repair? Contact dealer or Gendex. System will be replaced if under warranty, usually on the next business day.

Is there a loaner program? No, since replacement of defective unit negates the need for a loaner while the unit is under warranty.

RAVES & RANTS

- + Only camera that allows you manipulate to the image w/o computer
- + Can see full image even if captured in quad
- Docking station is large
- Only stores four images

Camera

Steel casing. Weighs about 12.3oz/348.7g with the cord. Length is 7.5in/19.1cm. Diameter varies from 0.4in/1.0cm at the active end to 0.9in/2.3cm where you will hold it at the back end. Focal

length is adjusted by rotating the adjustment ring at the back end of the camera. While this is not a difficult maneuver, you probably will not be changing the settings during an exam. There are four settings: (1) E mode is for extraoral use and depth of focus is about 40mm (smile) to infinity (full face), (2) W mode is for wide-angle intraoral viewing from two teeth to a quadrant, (3) C mode is a close-up mode for viewing of one or two teeth, and (4) M mode provides Macro focusing with an increased magnification to as close as 1mm, which allows you to see the minor cracks on teeth.

Utilizes a SuperHAD 1/4" Sony Grade 6 CCD. The video processor technology provides automatic light intensity control, which eliminates glare and reflections from amalgams and produces true intraoral colors. The direction of view is 62°, which is from 15° to 5.5° backward viewing. This improves overall access, which enables easier viewing of the distal surfaces of second and third molars. Unlike most intraoral cameras that use simple prisms to obtain a 90°-80° direction of view, which inverts the image, it uses a non-inverting roof prism.

Maximum Number of Images That Can Be Stored

4

Camera Cord

Measures 6.0ft/1.8m. White color, not very flexible. It is attached to the docking station by a metal cylinder that inserts into a simple recess. To remove the camera from the docking station, you merely pull out the connector, a movement that can be done with one hand. To reconnect the camera to the docking station, you need to line up the red dot indicators before you completely insert it. You will hear a slight click indicating that the camera is properly connected. Damage could occur to the camera and/or docking station if this maneuver is not done properly.

Docking station

White plastic measuring 10.0in/25.4cm in width, 12.0in/30.5cm in depth, and 3.5in/8.9cm in height. The camera sits in a convenient holder on the right side of the camera and automatically turns on when picked up. It has six control buttons: (1) Printer icon to facilitate printing. (2) Bulb icon that turns the light on or off. (3) Page icon shows a 4-way split to indicate this will allow you to capture four separate images on the screen. (4) Camera icon indicating the capture function. (5) M/Hand piece icon button toggles between live images and images stored in memory. (6) 1/2 button lets you toggle between video signal 1 and 2.

There are also four manipulation buttons for the images: (1) Tooth and a magnifying glass, which magnifies the image from the center only. (2) Two teeth flipped vertically, to flip it. (3) Two teeth left and right of each other that flips the image horizontally. (4) Tooth with arrows circling it, which is for rotating the image.

Light Source

Uses a 75 watt halogen bulb. Transmitted through two bars on the left and right of the lens.

Footpedal

Wired. Has two sections: C and M. C is for capture and M is for memory. Click on C one time to freeze the image. If the captured image is flickering on the screen, click C one more time. Then click and hold down C to save the image to memory and to return to the capture mode (live). Double-click C to print the image you have captured (assuming the system is connected to a printer). Click on M to preview pictures stored on to the memory board.

Directions

The instruction manual is 220 pages and includes five languages (44 pages per language). The manual covers operation, how to connect the system, how to place the sheaths, how to replace the light bulb, cleaning and sterilization, and warranty. It is spiral bound, well written and easy to understand and follow with pictures and graphics. ➤

2

Aurora 2
Digital Doc★★★★★
(4.2)

NEW

Cost: \$6,995.00**Includes:**

- Aurora 2 Camera
- Battery Charger
- NPF750 battery
- Charger power cable
- 25 sheaths

Cost: \$325.00**Includes:**

- Integration Kit for flat screen
- 4 channel wireless receiver
- Video cable
- Capture cable

Warranty: 2 years**Is delivery included?** Yes.**Is installation included?** Yes.**Is training included?** Yes, by dealer or sales representative.**What if it needs repair?** Call customer service. There is a 72 hour turn around on all repairs.**Is there a loaner program?** No.

RAVES & RANTS

- + Wireless makes moving from room to room effortless
- + Captures 12 images
- No automatic counting mechanism when capturing images
- No image manipulation

Camera

Steel casing except at front end, which is beige plastic. Weighs about 10.5oz/297.7g with the cord. Length is 9.9in/25.1cm. Diameter is 0.9in/2.2cm where you hold it, 0.7in/1.7cm at the front end. Focal length is adjusted by the position of the lens chamber, which is the constricted area near the front end. By pulling the lens chamber out as far as it will go, you will be in the close-up setting. You will see a red reference line near the base of the lens chamber. The middle position, where the red reference line is barely visible, gives you the two surfaces position. By pushing the lens chamber into the camera's back end as far as it will go, you will get to the full smile/full face position. When taking smile images, a sheath is not recommended. While these adjustments are not difficult, you probably will not be changing the settings during an exam.

There is also a small image capture plastic button on the top of the camera, where you have access to it regardless of whether you are right-handed or left-handed. This button is easy to activate and doesn't cause distortions in your image. You depress the button to capture and hold the button down to save. To recapture the image, press the button once more to erase and to go live again.

Utilizes a SuperHAD 1/4" Sony high resolution CCD with auto white balance and continuous variable speed shutter. Has a 105° field of view with 50x macro lens.

Maximum Number of Images That Can Be Stored

12

Camera Cord

Measures 6.0ft/1.8m. Beige color, very flexible. It is attached to the memory capture module.

Docking Station

Not really a docking station, but really part of the camera called the memory capture module. Beige in color and measures 6.0in/15.2cm in width, 5.5in/14.0cm in depth, and 2.0in/5.1cm in height without the battery, which adds about 1.0in/2.5cm in width. It has control board for seven different commands and one indicator. The buttons have one-word descriptions for their respective functions: (1) *View* to see captured images. (2) *Live* to go into capture mode. (3) *Next* for scrolling forward through your images. (4) *Clear* deletes all stored images. (5) *Light* turns the light on or off. When the light is turned off, you can capture an x-ray on a viewbox. Resulting image has the appearance of greyscale and does not have a blue overtone. (6) *Send* will download stored images to imaging software, assuming you have the software and a capture cable. (7) *On* will activate/deactivate the camera. (8) *Low* will illuminate orange when the battery is low.

Light Source

Array of nine LEDs emitting high output TrueSpectrum light arranged around three sides of the lens.

Footpedal

None.

Directions

Simple cardboard foldout. Straightforward, easy to understand. ➤



(4.1)

eVolution M-Series

Digital Doc

3

NEW

Camera

Steel casing except at front end, which is beige plastic. Weighs about 10.5oz/297.7g with the cord. Length is 9.9in/25.1cm. Diameter is 0.9in/2.2cm where you hold it, 0.7in/1.7cm at the front end. Focal length is adjusted by the position of the lens chamber, which is the constricted area near the front end. By pulling the lens chamber out as far as it will go, you will be in the close-up setting. You will see a red reference line near the base of the lens chamber. The middle position, where the red reference line is barely visible, gives you the two surfaces position. By pushing the lens chamber into the camera's back end as far as it will go, you will get to the full smile/full face position. When taking smile images, a sheath is not recommended. While these adjustments are not difficult, you probably will not be changing the settings during an exam.

There is also a small image capture plastic button on the top of the camera, where you have access to it regardless of whether you are right-handed or left-handed. This button is easy to activate and doesn't cause distortions in your image. You depress the button to capture and hold the button down to save. To recapture the image, press the button once more to erase and to go live again.

Utilizes a SuperHAD 1/4" Sony high resolution CCD with auto white balance and continuous variable speed shutter. Has a 105° field of view with 50x macro lens.

Maximum Number of Images That Can Be Stored

12

Camera Cord

Measures 6.0ft/1.8m. Beige color, very flexible. It is attached to the backpack by beige cartridge module.

Docking Station

Called a backpack, measuring 11.0in/27.9cm in width, 6.0in/15.2cm in height, 2.0in/5.1cm in thickness. It is designed to be mounted on the back of an LCD monitor, but there is no adapter for a CRT. To remove the camera from the backpack is a matter of just sliding it out. Has its own capture board—you connect it directly to a monitor—a computer is not necessary.

Wireless Remote Control

Small, easily fits in your hand. The buttons have one-word descriptions for their respective functions: (1) *View* to see captured images. (2) *Live* to go into capture mode. (3) *Next* for scrolling forward through your images. (4) *Prev* for scrolling backward through your images. (5) *Clear* deletes all stored images. (6) *Light* turns the light on or off. When the light is turned off, you can capture an x-ray on a viewbox. Resulting image has the appearance of greyscale and does not have a blue overtone. (7) *Save* will save an image to imaging software, assuming you have

Cost: \$5,595.00**Includes:**

- Camera module
- M-Series backpack
- Wireless remote control
- S-Video and Composite cables
- 12v power supply
- 25 sheaths

Cost: \$143.00 (\$0.29 ea)

- Camera sheaths (500)

Additional and/or optional equipment/services**\$400.00** Extended warranty/year**\$1,395.00** M-Series backpack**Warranty:** 2 years**Is delivery included?** Yes.**Is installation included?** Yes.**Is training included?** Yes, by dealer or sales representative.**What if it needs repair?** Call customer service. There is a 72 hour turn around on all repairs.**Is there a loaner program?** No.

RAVES & RANTS

- + Best illumination
- + Remote control for viewing images
- Sheaths must be pressed against lens
- Activating capture button without moving camera is tricky

the software and a capture cable. (8) *Gain* will increase the light level mainly for extraoral images.

Light Source

Array of nine LEDs emitting high output TrueSpectrum light arranged around three sides of the lens.

Footpedal

None.

Software

None. You connect via a capture cable to any software of your choosing, although this system is really designed to be used without a computer.

Directions

Simple cardboard foldout. Straightforward, easy to understand. ➤

4

MicroPlus

Progeny

www.progenydenal.com

★★★★★
(4.0)

RAVES & RANTS

- + Handpiece with multi-features
- + Lightweight
- Capture button changes sides when camera is inverted
- Focus adjustment difficult during use

Cost: \$5,665.00**Includes:**

- Camera
- Multi-Operatory Docking Module
- RCA Video Cable
- SVHS Composite Video Cable
- MultiConnect Cable
- Power Supply Cable
- Disposable sheath sample pack (25)

Cost: \$115.00 (\$0.23 ea)

- Camera sheaths (500)

Additional and/or optional equipment/services**\$360.00** Operatory Kit**\$105.00** Footswitch**\$495.00** 1-year extended warranty**\$39.00** Lamp**\$80.00** Camera mount (wall or rail)**Warranty:** 1 year**Is delivery included?** Depends on dealer.**Is installation included?** Depends on dealer.**Is training included?** Yes, by dealer and/or Progeny.**What if it needs repair?** Call dealer.**Is there a loaner program?** No.**Camera**

White plastic with blue accents. Weighs about 10.0oz/283.5g with the cord. Length is 8.3in/21.0cm long. Diameter varies from 0.5in/1.3cm at the active end to 1.0in/2.3cm where you will hold it at the back end. The focus adjustment is done using your index finger, simply sliding the switch on the top of the camera forward and backward. The extreme forward position is for close-up views, while the extreme back position is the full arch/smile/full face. While this is not a difficult maneuver, you probably will not be changing the settings during an exam.

There is also a small image capture blue button on the right side where your right thumb would rest if you were right-handed. Activating this button is easy unless you were left-handed, in which case you would have to use your left middle finger.

Utilizes a Sony super color 1/4" CCD, with a field of view of 90°. They also have an electronic soft-start, single point illumination, automatic light source (which eliminates glare and reflections from amalgams and produces true intraoral colors), and automatic defogging.

Maximum Number of Images That Can Be Stored

4

Camera Cord

Measures 6.3ft/1.9m. Light blue color, very flexible. It is attached to the docking station permanently. You can not remove the cam-

era from the docking station to remove the docking station and camera to go to another room. You would have to unscrew the video cable.

Docking Station

White plastic measuring 4.0in/10.2cm in width, 7.0in/17.8cm in depth, and 1.5in/3.8cm in height. More of a connector than a docking station, since the camera cannot be detached from it. There is no switch for turning off the light so you can capture an x-ray on a viewbox.

Light Source

Uses a 6 watt halogen bulb. Transmitted through two bars on the left and right of the lens.

Foot pedal

Optional (we did not receive it for evaluation).

Directions

The instruction manual for the Micro is 15 pages. It covers the operation, how to connect the system, how to place the protective sheaths, how to replace the light bulb, cleaning and sterilization, and warranty. These are well written and easy to understand and follow with pictures and graphics. ➤

REALITY

SYSTEMS DESIGNED FOR USE WITH COMPUTERS

eVolution C-Series gives you a unique sliding mechanism to adjust the magnification ratio. Unlike rings that have to be rotated, this focusing mechanism can be used intraorally without much difficulty. However, the position you choose can be inadvertently changed when you pull the sheath tightly over the head and shaft of the instrument. When the lens is fully extended, you are in the close-up mode, which allows you to capture from a section of a tooth to one tooth. In the intermediate setting, where the red band is just visible, you can get a full arch and smile view, while the fully intruded position provides the full face image.

Another feature is the plastic clad head. Although it doesn't protect the teeth from the "clanging" effect totally, it is better in this respect than the all-metal cameras. This is also the only system in this group with pure white LED illumination. With the array of LEDs encircling the lens on three sides, this type of illumination is more diffuse, like a ring light with a SLR camera. There are very few shadows, making the images more pleasant to view. Even the color of teeth looks more natural under this light.

The very small base unit slides in and out of the docking station very easily, making transporting it from room to room a breeze. However, the protective sheaths must be pressed onto the lens to avoid having the images appear hazy. Capturing the image with the top-mounted button is not difficult, but it takes some stabilization not to move the camera when you press the button.

AcuCam Concept IV^{FWT} is the updated version of one of the venerable names in this category, only now it incorporates speedy image capturing with FireWire technology. The camera itself has a focusing ring with four settings. While this knob is easy to adjust extraorally, trying to do it in the mouth is cumbersome. Luckily, you won't have to change this focus very often intraorally. With the four reference settings on the focusing ring, you'll know which one to use before you ever place it in the mouth. The "C" setting gives you a clear view of one tooth with very good color. The "E" setting gives you a full face that appears slightly distorted, but the full smile is acceptable with proper illumination. The "W" setting gives you the ability to see quadrant views, with reasonably good illumination. Finally, you can see small fractures in the enamel with

the "M" setting. You can turn off the light to capture an x-ray, but the image has a blue cast to it. On the other hand, the detachable holster is a very useful feature, since it allows you to mount the camera wherever it is most convenient to you.

ImageCAM USB 2.0 is basically an updated version of the same camera that has been available for several years. It has two settings, with the "I" supposed to allow you to go from a full arch to a single tooth without focusing. However, the single tooth view on this setting is not very clear—the "M" setting is much better for a single tooth. However, the "I" does give you a good smile view with the proper amount of illumination. This camera is also supposed to have an auto-adjust feature on the light, which lessens or intensifies the illumination as needed. For example, when you want a full arch view, it automatically increases the light, and conversely, when you switch to a single-tooth view, it decreases the amount of light as necessary. However, this feature is not visibly apparent during use. Nevertheless, the light transmitted by this camera was the most intense by far.

On the control box, you can turn off the light and change the image from color to grayscale if you want to capture a radiograph on a viewbox—it is the only system with this feature. The grayscale does give you a better view of an x-ray than just turning off the light, which allows you to view the x-ray but the image has a blue overtone to it. There are also two different illumination settings: color preset 1 and color preset 2. We were not able to see any difference whatsoever between the two color presets. Nevertheless, the color of the light itself is quite white. In addition, there are also normal and supersharper capture modes. We again were not able to see any differences between these modes.

Furthermore, it is very easy to move this system from room to room, especially with the optional wireless RF footpedal—it is the only system with this feature. However, without the footpedal, the only way to capture an image is by using the mouse, making the procedure a 2-person operation.

STAND-ALONE SYSTEMS

AcuCam Concept IV shares the same camera with the FireWire computerized model. What makes this camera stand out from the pack is the docking station, which is

the only one in this category that will allow you to rotate the images and to turn them right side up, zoom, and get a mirror view, all without connecting to a computer. There are even icons on the soft-touch control panel telling you graphically the function of each button. However, you can only save four images at a time.

Aurora 2 shares the same camera with the Evolution C-series. But what makes this product so unique and convenient is its wireless docking station. While a wireless camera would be the ultimate, being able to walk room to room with this system has many advantages, especially if your practice is low volume and you would be using the camera on only one patient at a time. The docking station has all the functions that you need for viewing the captured images. However, just like with the Evolution M, you have to manually count the images as you capture them.

Note: You can save the images and transfer them to a computer or print them on a SD-compatible printer by purchasing a Panasonic D-snap SV-AV50 video camera from any online vendor. You need, however, to purchase an additional integration kit from Digital Doc for \$375.00 to be able to connect to the Aurora 2.

eVolution M-Series shares the same camera with the C-Series. Its base unit, however, has the addition of a RF transmitter that communicates with the remote control that is used to view your images. When you capture an image, it is automatically saved, with 12 being the maximum. However, you have to keep a manual count of these images—the camera doesn't tell you how many you have saved. The remote control is a very useful part of the system, since it will let you sit side-by-side the patient rather than having to be at the monitor.

Note: You can save the images and transfer them to a computer or print them on a SD-compatible printer by purchasing a Panasonic D-snap SV-AV50 video camera from any online vendor. A capture cable, however, must be purchased from Digital Doc for \$95.00 to be able to connect to the M-Series.

Micro Plus is the only totally plastic-clad camera in this section. This is a big advantage if you are prone to "clanging" teeth, since the plastic won't jar a patient if it contacts a tooth the same way metal does. The small focus button, located on top of the camera, merely slides forward and backward and is the easiest of all to adjust. When it is moved rearward as far back as it will go, you are out of focus with the full face, but if you move it slightly forward, you can capture a full face to just about a smile view. With the focus button at mid-point, you can capture one tooth, while the view in the extreme forward position is very close-up.

It has exceptionally good color and exhibits the ability to capture even half a tooth very clearly with excellent illumination. The quality of the images are crisp, while the illumination system adjusts automatically from full face views to a single tooth without affecting overly dark or light images. However, while the capture button on the left side of the handpiece seems to be in perfect position for right-handers to use their thumb when the camera is imaging mandibular teeth, it is just the opposite when the camera is upside down to capture maxillary teeth. This reversal means their middle finger instead of the thumb needs to be used. We found this activation with the middle finger (assuming you are using your index finger for focusing) cumbersome and not intuitive. And the button is very easy to push and can, indeed, be accidentally activated easily.

The capture options are full or quadrant screens. To enter into one mode or the other, you merely depress and hold the capture button. You will then hear a series of beeps that indicate you have changed the screen. You can toggle back and forth between these views by repeating this action. Once you fill the quad view with four images, you will replace each image as you capture more views. However, you will lose these views as soon as the camera is turned off.

Note: There is a computerized version of this system called merely the Micro. The camera is identical, but it does not have a capture board and it is somewhat less expensive. We have evaluated this version in previous years, but it was not submitted this year.

OTHER PRODUCTS IN THIS CATEGORY

FlexiScope Micro Vision
SciCan

HotRod Dental-Imager Camera
Imagin Systems

Imagin NewLook 2020
Imagin Systems

ME-15 wireless
Dent Corp

Optum
CamSight

Sens-A-View II
Dent-X

Sopro 595
Sopro

UltraCam
UltraCam

USBCam
Schick Technologies

ViperCam/ViperCam DV
Integra Medical

Vista Cam Omni ic4
Air Techniques

VistaCam Omni
Air Techniques